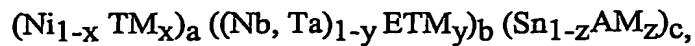


WHAT IS CLAIMED IS:

1. A glass forming alloy having a composition given by:



5 where ETM is an early transition metal selected from the group of Ti, Zr, Hf, Cr, Mo, and W; TM is a transition metal selected from the group of Mn, Fe, Co, and Cu; and AM is an additive material selected from the group of B, Al, Si, and Sb;

where a is in the range of from 50 to 65, b in the range of 30 to 45, c is in the range of 2 to 10 in atomic percentages; and

10 where x is less than 0.2, y is less than 0.3, z is less than 0.5, and the sum of x, y and z is less than about 0.5.

15 2. The glass forming alloy described in claim 1 wherein a is in the range of from 55 to 62, b in the range of 33 to 40, and c is in the range of 2 to 8 in atomic percentages; and

where x is less than 0.1, y is less than 0.2, z is less than 0.3, and the sum of x, y and z is less than about 0.3.

20 3. The glass forming alloy described in claim 2 wherein ETM is an early transition metal selected from the group of Ti, Zr, and Ta; TM is a transition metal selected from the group of Fe, Co and Cu; and AM is an additive material selected from the group of B and Si.

25 4. The glass forming alloy described in claim 1 wherein the alloy has a ΔT_{sc} of more than 40 °C.

5. The glass forming alloy described in claim 1 wherein the liquidus temperature of the alloy is 1160 °C or less.

30 6. The glass forming alloy described in claim 1 wherein the alloy has a Vickers hardness greater than 940 Kg/mm².

7. The glass forming alloy described in claim 1 wherein the alloy has a yield strength of greater than 2 GPa.

8. The glass forming alloy described in claim 1 wherein the alloy has a 5 yield strength of about 3 GPa or more.

9. The glass forming alloy described in claim 1 wherein the alloy has a Young's modulus of greater than 160 GPa.

10 10. The glass forming alloy described in claim 1 wherein the alloy has a ratio of glass transition temperature to liquidus temperature of around 0.6 or more.

11. The glass forming alloy described in claim 1 wherein the alloy is substantially amorphous.

15 12. The glass forming alloy described in claim 1 wherein the alloy contains a ductile crystalline phase precipitate.

13. The glass forming alloy described in claim 1 wherein the alloy is 20 $\text{Ni}_{60}\text{Nb}_{37}\text{Sn}_3$.

14. The glass forming alloy described in claim 1 wherein the alloy is $\text{Ni}_{55}\text{Fe}_5\text{Nb}_{35}\text{Sn}_5$.

25 15. The glass forming alloy described in claim 1 wherein the alloy is $\text{Ni}_{60}\text{Nb}_{35}\text{Sn}_3\text{B}_2$.

16. The glass forming alloy described in claim 1 wherein the alloy is $\text{Ni}_{55}\text{Nb}_{31}\text{Sn}_9\text{Cu}_5$.

30 17. The glass forming alloy described in claim 1 wherein the alloy is $\text{Ni}_{55}\text{Nb}_{28}\text{Sn}_6\text{Zr}_3\text{Co}_5\text{Ti}_3$.

18. An article made of an amorphous alloy of basic composition given by:
35 $(\text{Ni}_{1-x} \text{TM}_x)_a ((\text{Nb}, \text{Ta})_{1-y} \text{ETM}_y)_b (\text{Sn}_{1-z} \text{AM}_z)_c$,

where ETM is an early transition metal selected from the group of Ti, Zr, Hf, Cr, Mo, and W; TM is a transition metal selected from the group of Mn, Fe, Co, and Cu; and AM is an additive material selected from the group of B, Al, Si, and Sb;

where a is in the range of from 50 to 65, b in the range of 30 to 45, c is in the range of 2 to 10 in atomic percentages;

where x is less than 0.2, y is less than 0.3, z is less than 0.5, and the sum of x, y and z is less than about 0.5.

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19. The article described in claim 18 wherein a is in the range of from 55 to 62, b in the range of 33 to 40, and c is in the range of 2 to 8 in atomic percentages; and

10 where x is less than 0.1, y is less than 0.2, z is less than 0.3, and the sum of x, y and z is less than about 0.3.

15 20. The article described in claim 19 wherein ETM is an early transition metal selected from the group of Ti, Zr, and Ta; TM is a transition metal selected from the group of Fe, Co and Cu; and AM is an additive material selected from the group of B and Si.

21. The article described in claim 18 wherein the amorphous alloy has a ΔT_{sc} of more than 40 °C.

20 22. The article described in claim 18 wherein the liquidus temperature of the amorphous alloy is 1160 °C or less.

25 23. The article described in claim 18 wherein the amorphous alloy has a Vickers hardness greater than 940 Kg/mm².

24. The article described in claim 18 wherein the amorphous alloy has a yield strength of greater than 2 GPa.

25 25. The article described in claim 18 wherein the amorphous alloy has a 30 yield strength of about 3 GPa or more.

26. The article described in claim 18 wherein the amorphous alloy has a Young's modulus greater than 160 GPa.

27. The article described in claim 18 wherein the amorphous alloy has a ratio of glass transition temperature to liquidus temperature of around 0.6 or more.

28. The article described in claim 18 wherein the alloy contains a ductile
5 crystalline phase precipitate.

29. The article described in claim 18 wherein the article is three dimensional having a size of least 0.5 mm in each dimension.

10 30. The article described in claim 18 wherein the article is three dimensional having a size of least 1.0 mm in each dimension.